

LBNL

Todd Morrill

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Todd Morrill

- Instructor, Lean LaunchPad - LaunchPad Central
- Faculty Director, SF Bay Area Node, NSF I-Corps
 - 36 cohorts of biomedical scientists, engineers
 - 500+ teams



- 4 startups: biomed, service, software, lifesci tool
- \$4B diagnostics/lifesci company, VP of M&A

...and...

“Strategic Research”



- Investment banking, corporate venture



- UC Berkeley professional faculty 7 years... plus...
- Other bio-related startup work:

Gone Public
(at least finished college)



Filed for public offering
(in college)



Investment stage





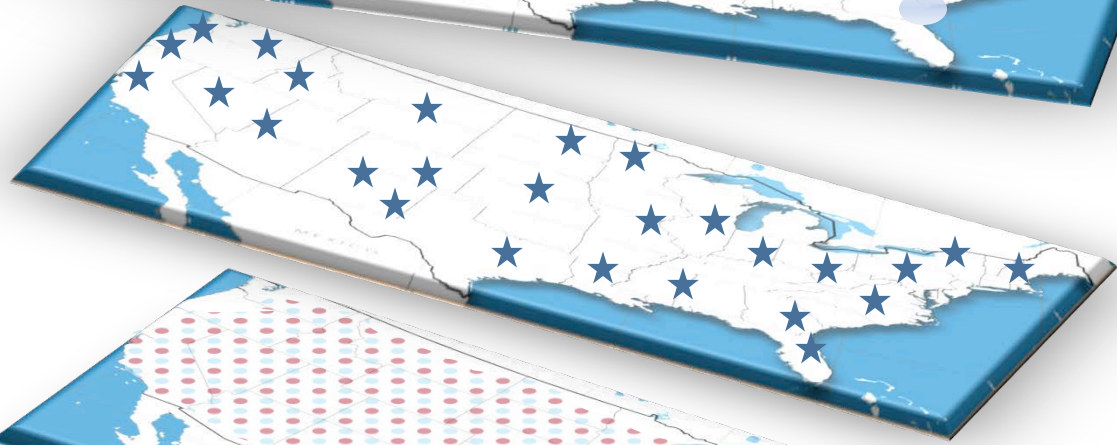
CORPSTM
NSF Innovation Corps

The Nation's I-Corps™ “Fabric”

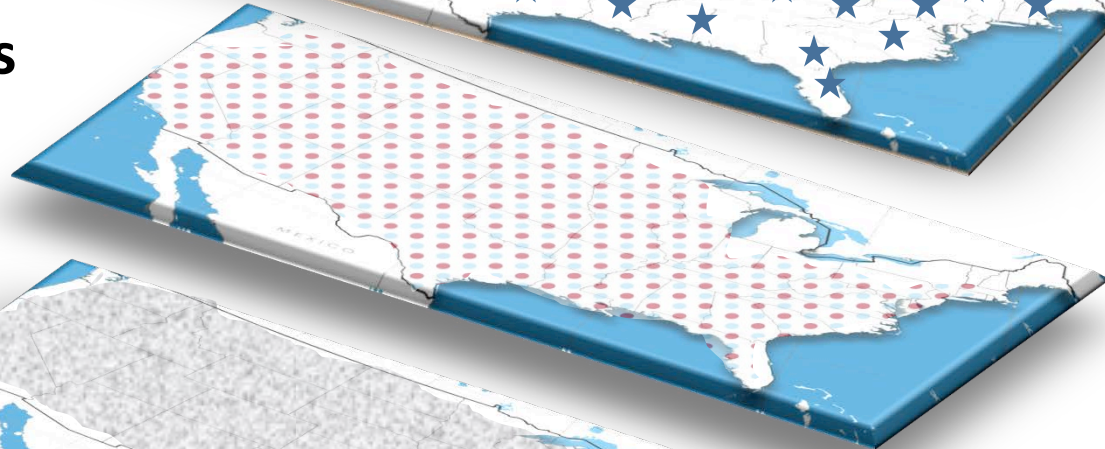
I-Corps™ Nodes



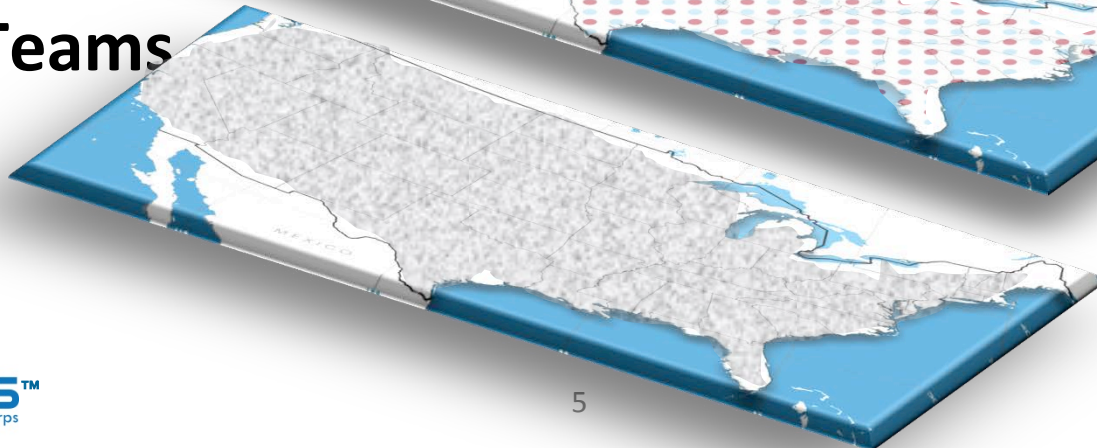
I-Corps™ Sites



I-Corps™ Mentors



I-Corps™ Teams





- Three person team
 - Entrepreneurial lead
 - Principal Investigator
 - Mentor
- 8 weeks long (5 days in-person, 5 webex)
- Customer and business model discovery
- *Customers, partners, collaborators, regulators, channels, payors, etc.*

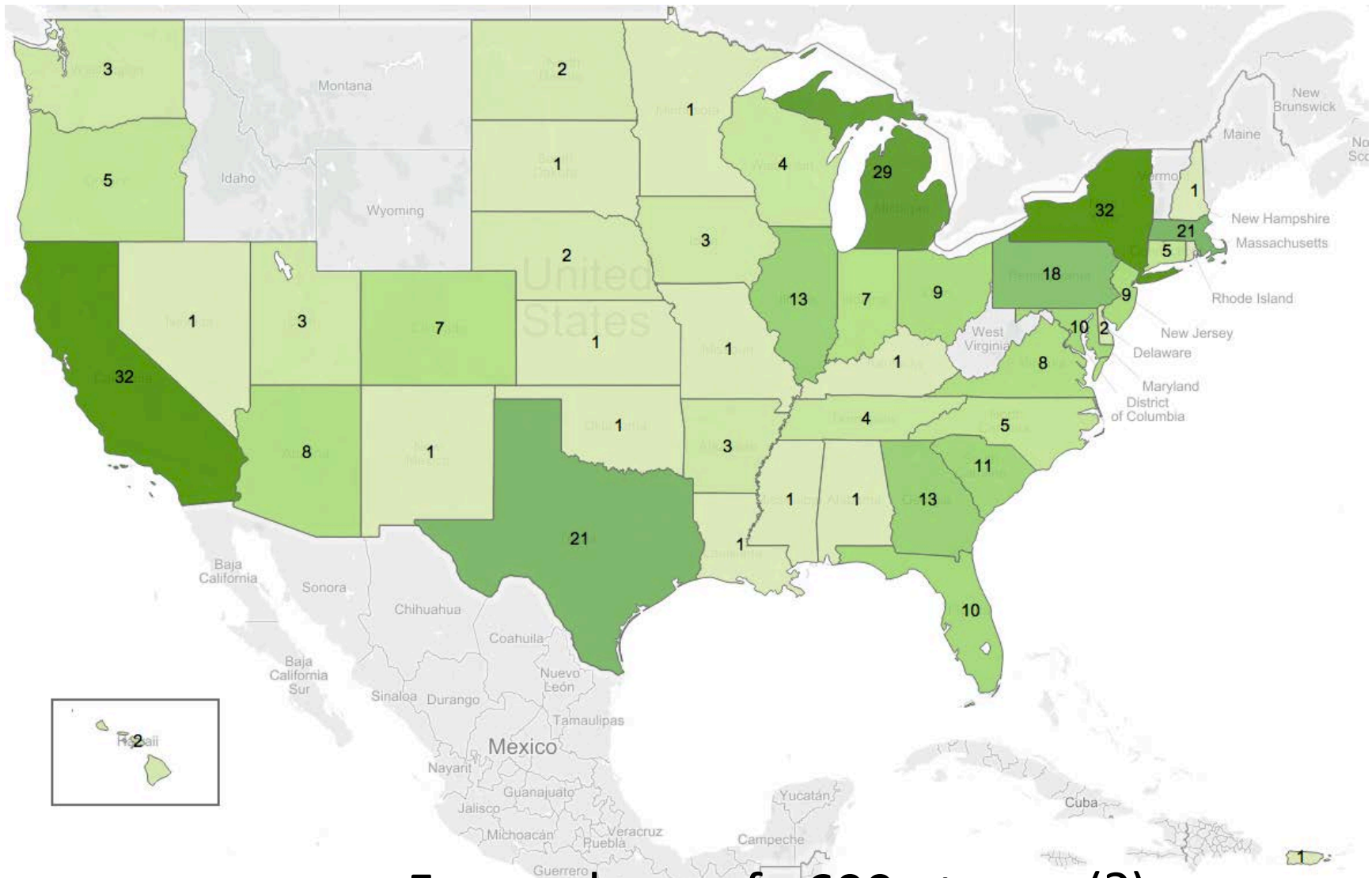
Participants reported the course met or exceeded expectations.

97%



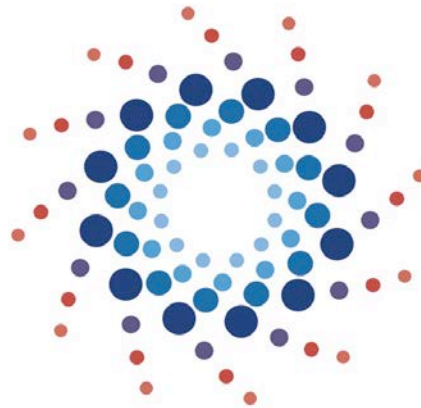
4% - Did not
meet my
expectations

I-Corps startups (n=324)



From a base of ~600+ teams(?)

112 teams won **140** SBIRs or STTRs

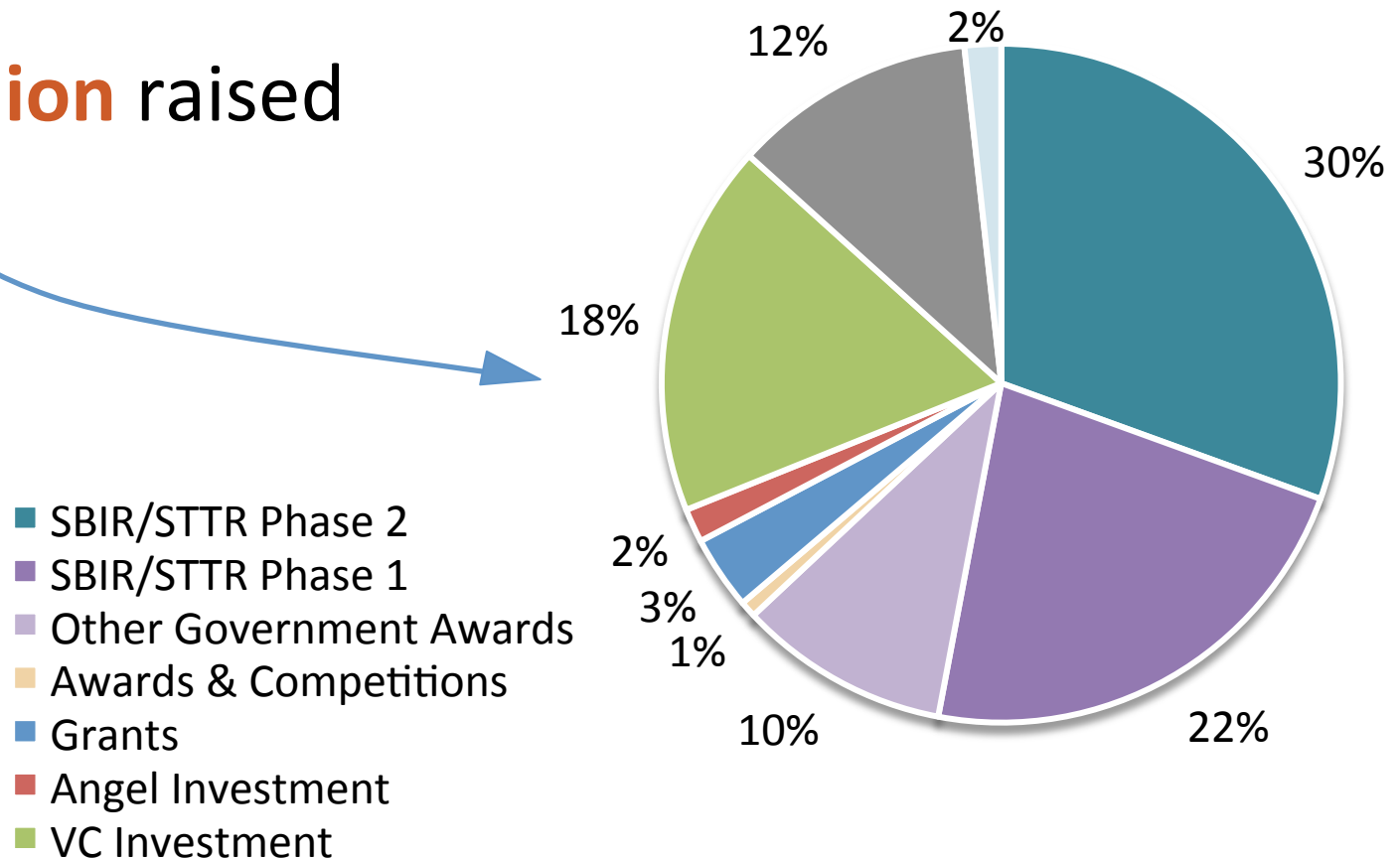


SBIR • STTR
America's Seed Fund

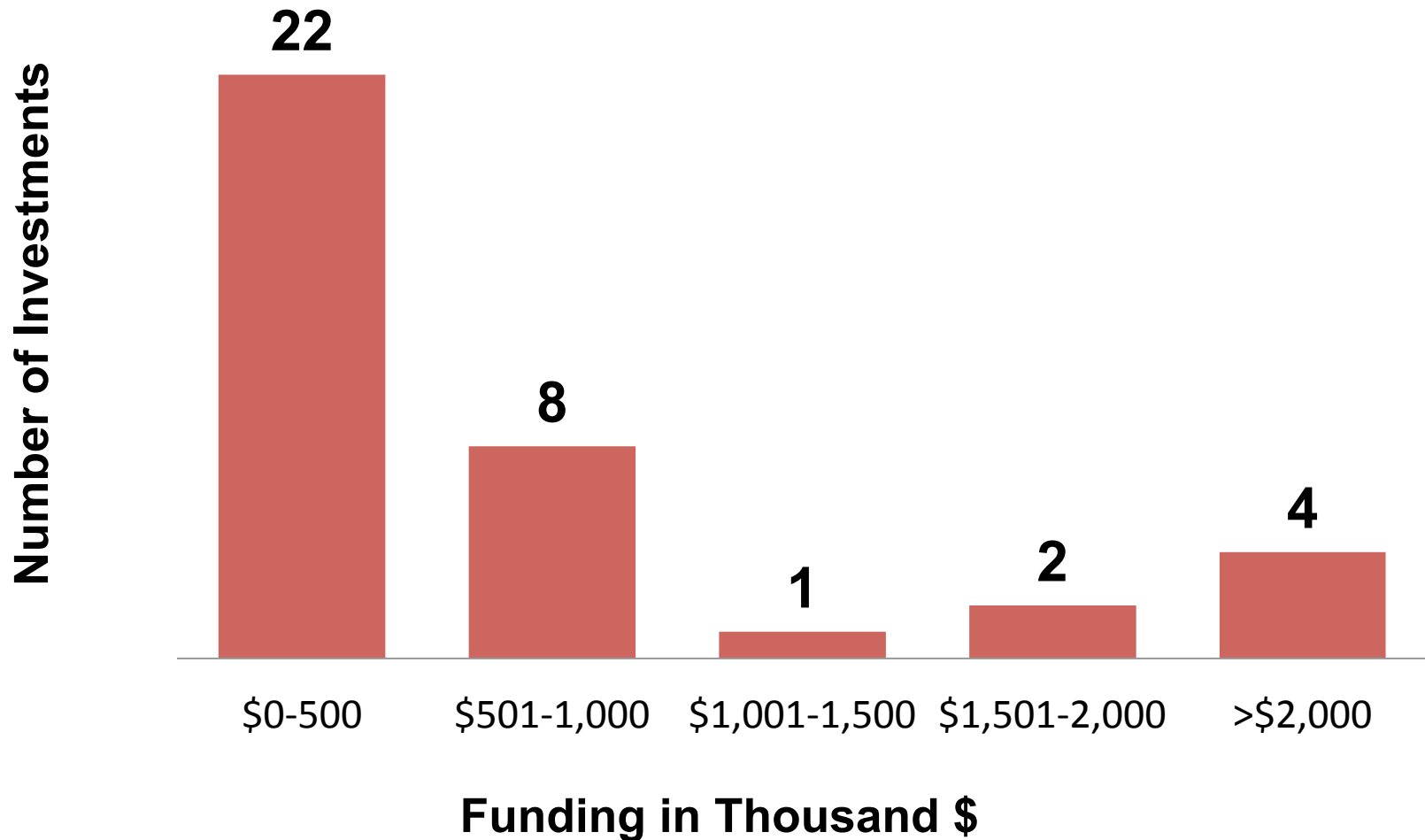


As of April 2016 ...

- **324** companies.... and growing
- **3** acquisitions
- **\$83 million** raised



Teams raised **37** private investments totaling **\$25.6 million**

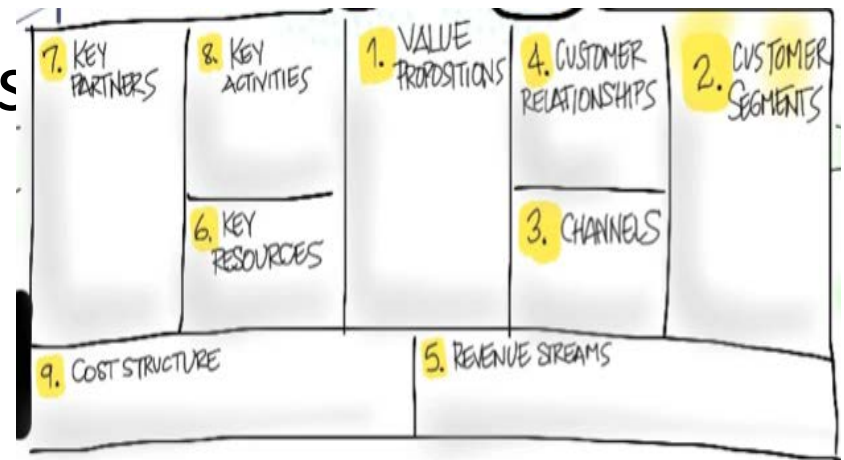


Core tool set

1. Customer interviews
 - 100 for the course
 - 10 in the next 3 days
 - 15+ per week average



2. Business Model Canvas



Core tool set

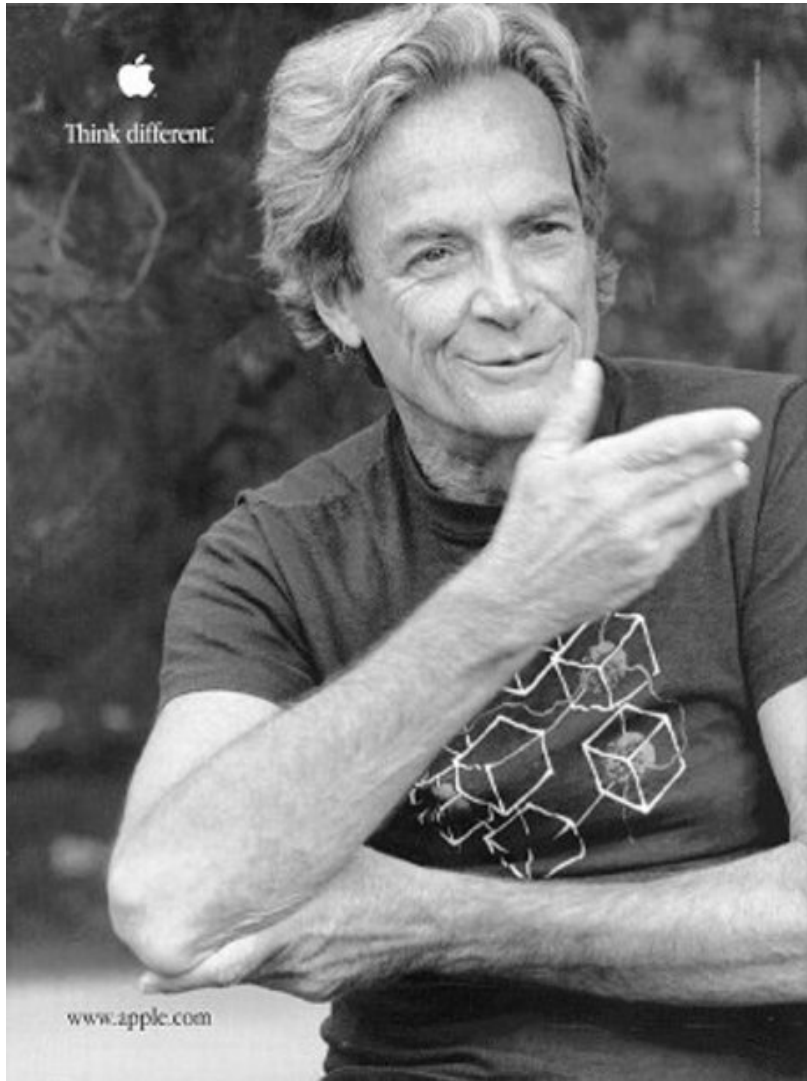
3. Flipped classroom

- You formulate and present
- You receive feedback
- It will be relentlessly direct



4.





***“It doesn’t matter how beautiful
your theory is, it doesn’t matter
how smart you are. **If it doesn’t
agree with experiment, it’s
wrong.**”***

Richard Feynman

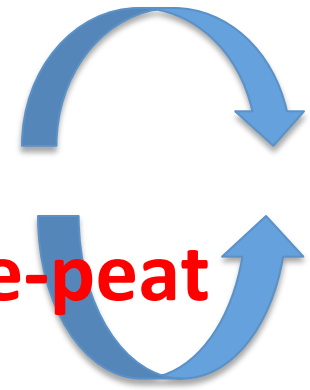
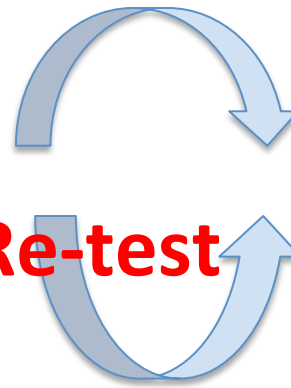
You are going to run experiments

- Formulate and **test** hypotheses
- Update your understanding
- **Re-formulate** your understanding based on new data

- **Re-hypothesize**

Re-test

Re-peat



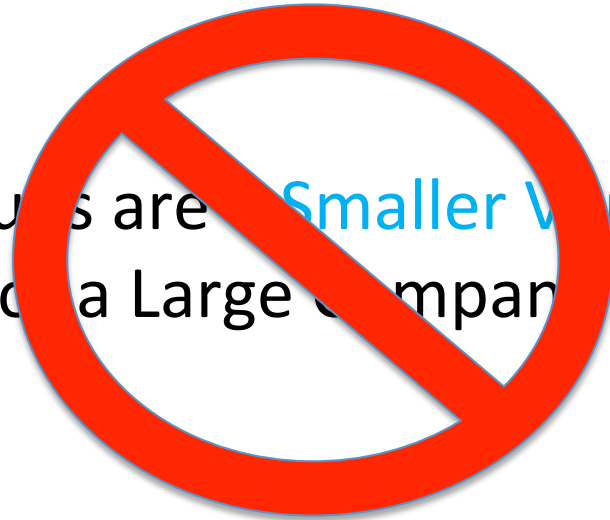
What we used to think...

Startups are a **Smaller Version**
of a Large Company



What we know now...

Startups are **Smaller Version**
of a Large Company



Large companies
and startups are not
even closely related
species

Key Partners



Key Activities



Value Propositions



Customer Relationships



Customer Segments



Questions for Today

- What we have learned in the first 110 years...

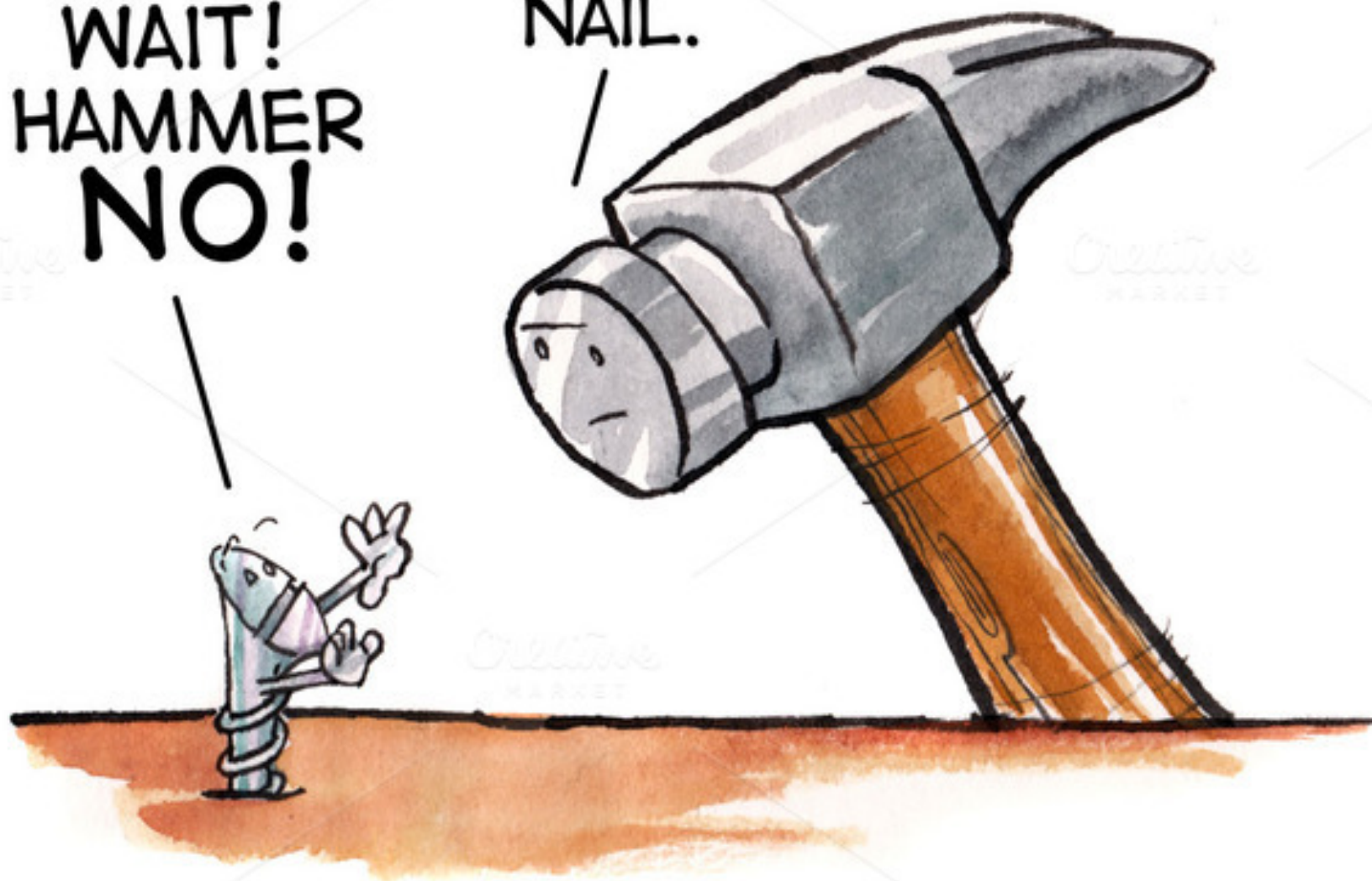


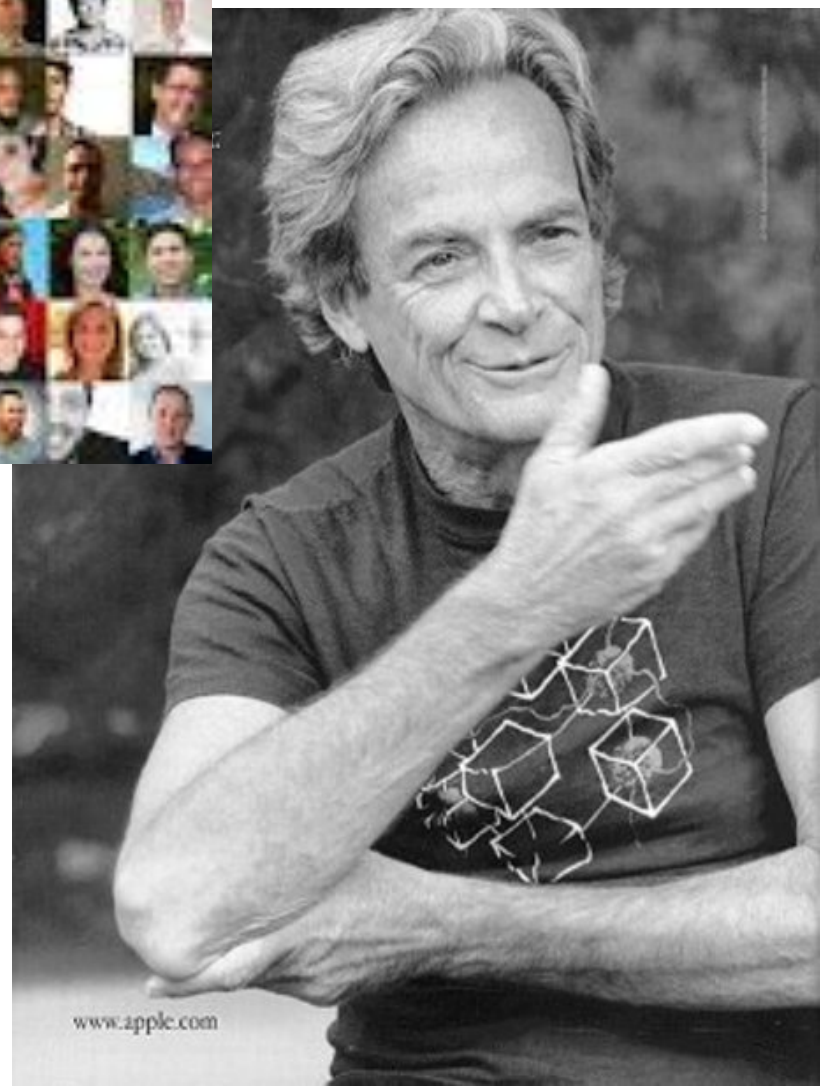
Cost Structure



WAIT!
HAMMER
NO!

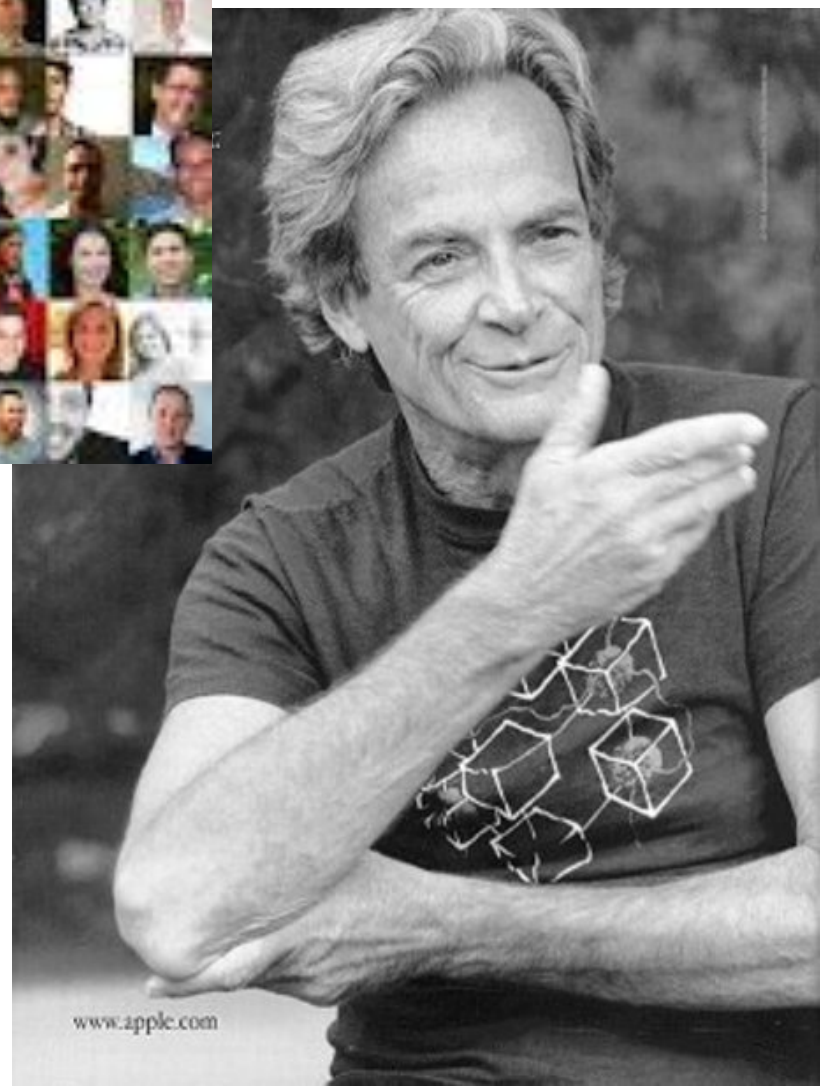
QUIET
NAIL.





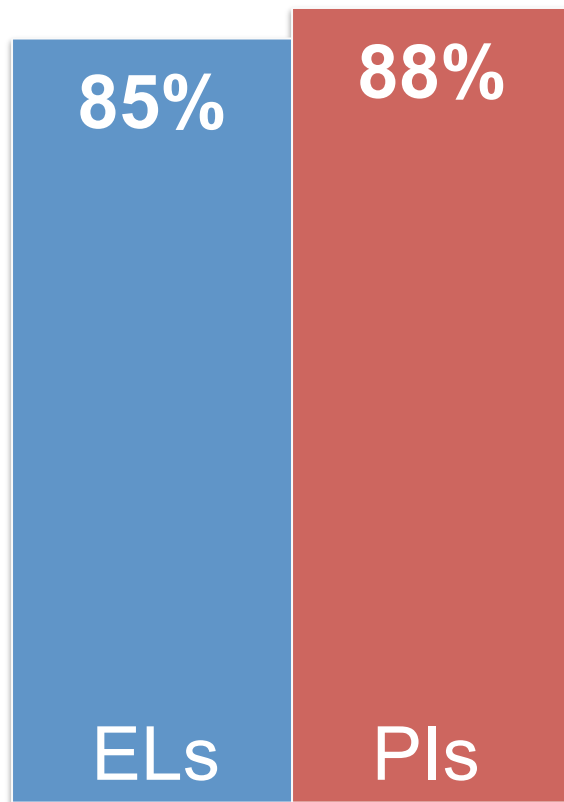
www.apple.com





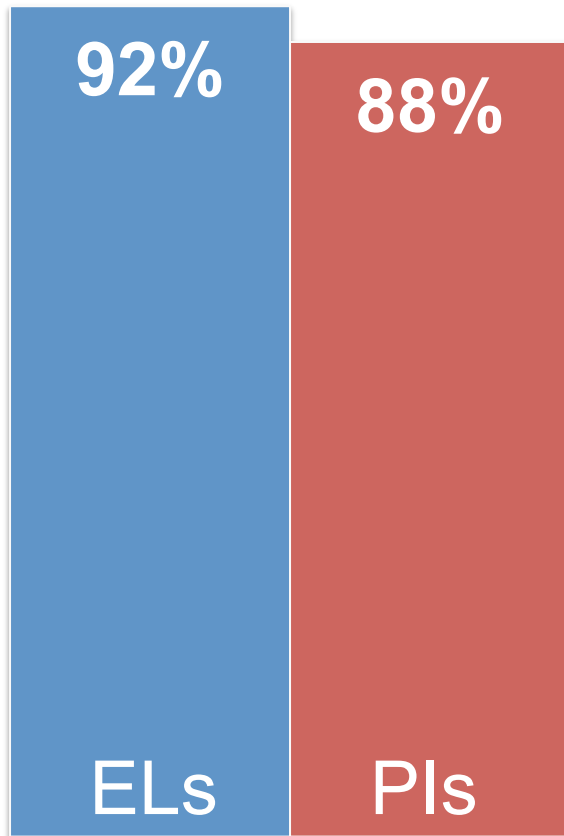
www.apple.com

I-Corps has a positive effect on participants' **research**



“[I-Corps] has **fundamentally changed my approach to my research** ... This foresight influences the types of experiments we do, the way we write our publications, and the way we write our grant proposals.”

I-Corps has a positive effect on participants' **careers**



“I [have] a different view about technology and how to apply to real problems. It is a **life changing experience.**”

“I-Corps is a **mindset-changing** program...”

Additional Positive Impacts

Mindset

“ I-Corps is a *mindset-changing* program...”

“ I am *much more interested* in research that can [lead] ultimately to a useful product...”

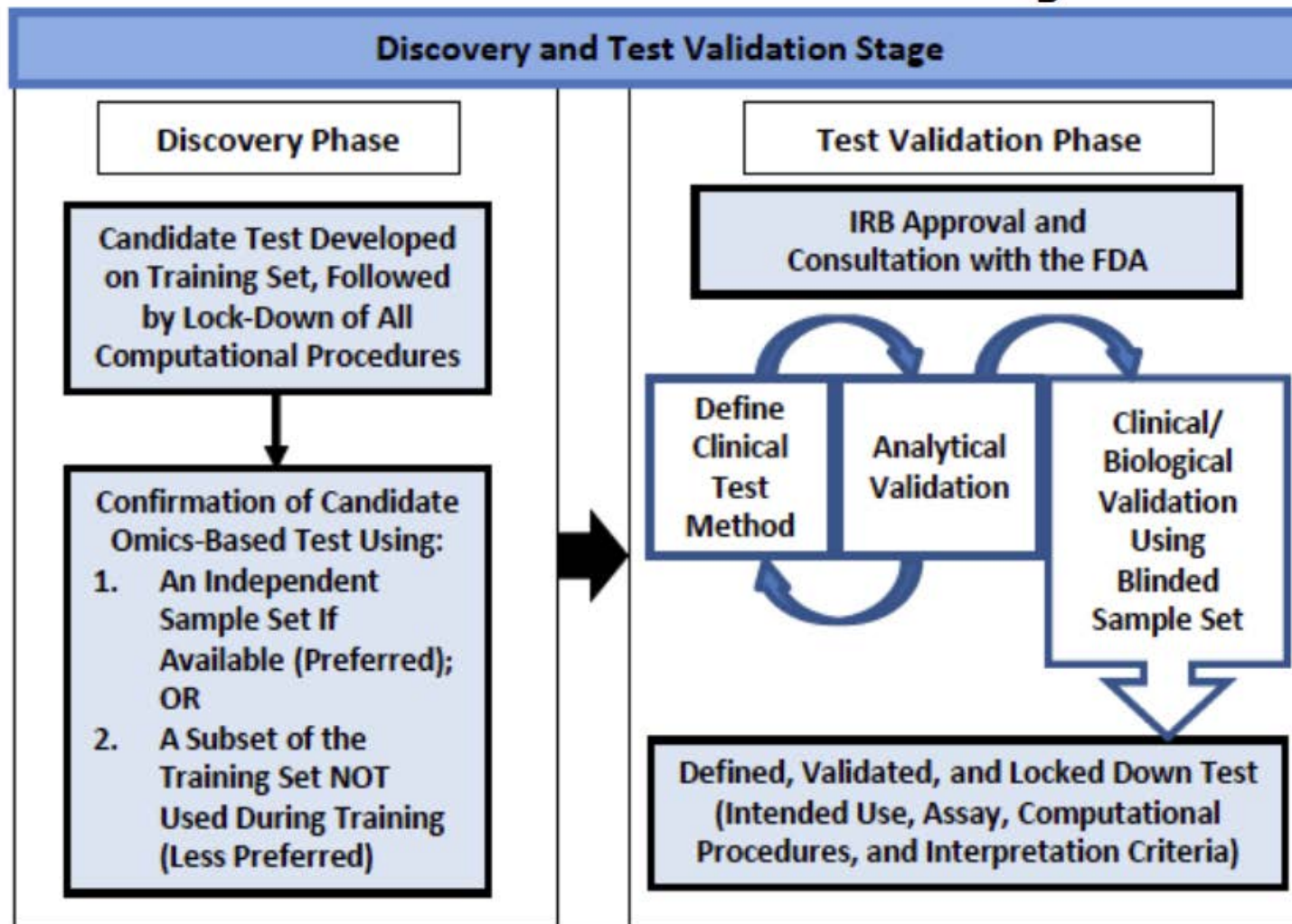
“ I no longer start a research or development project prior to planning the commercial aspect of it...”

Two Examples

1. Pre-grant team working on how to structure the grant application
 1. Depression-related therapeutics
2. Post-SBIR team working on the project

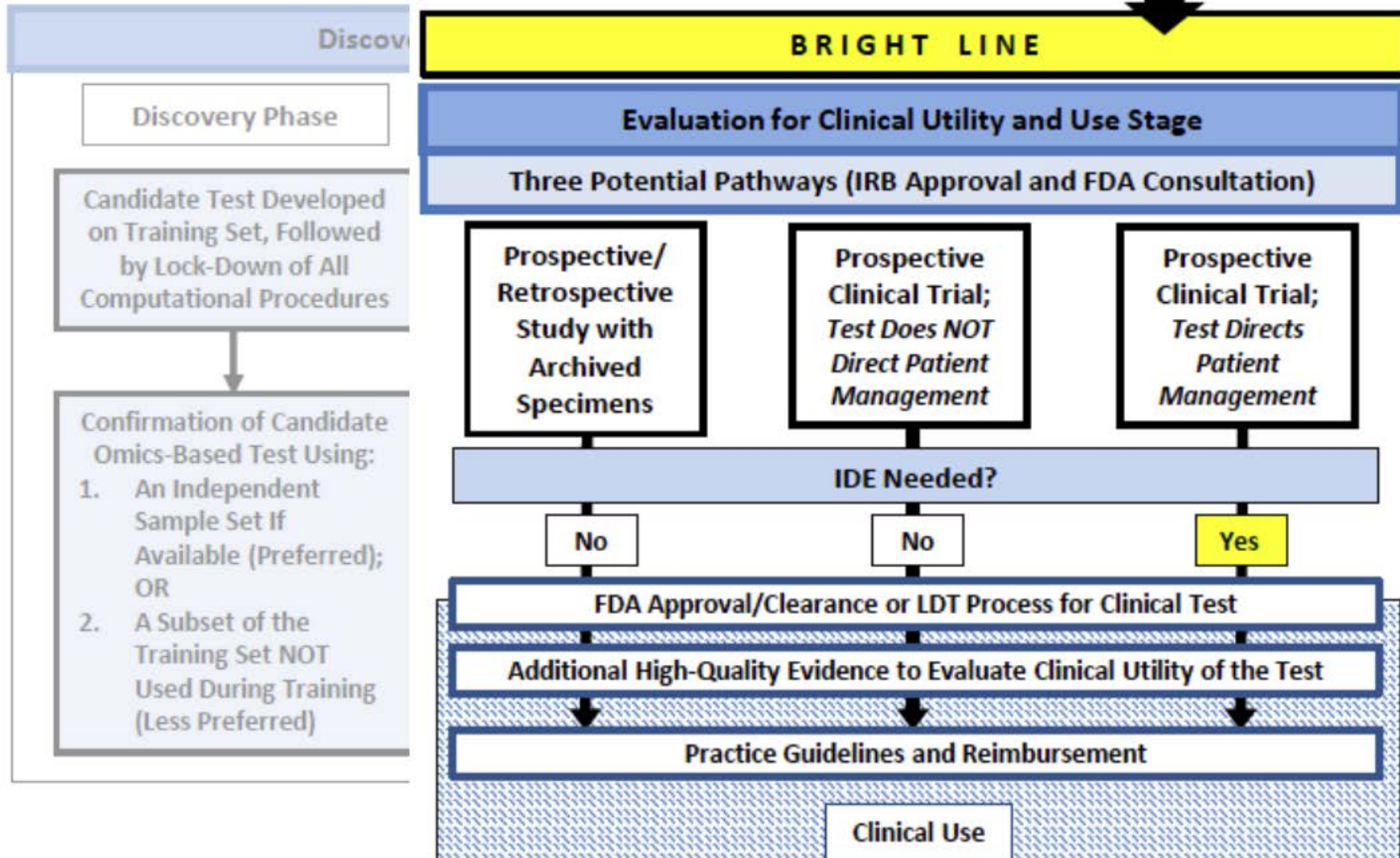
21_Depression Grand Challenge: RX

What we learned about Key Activities

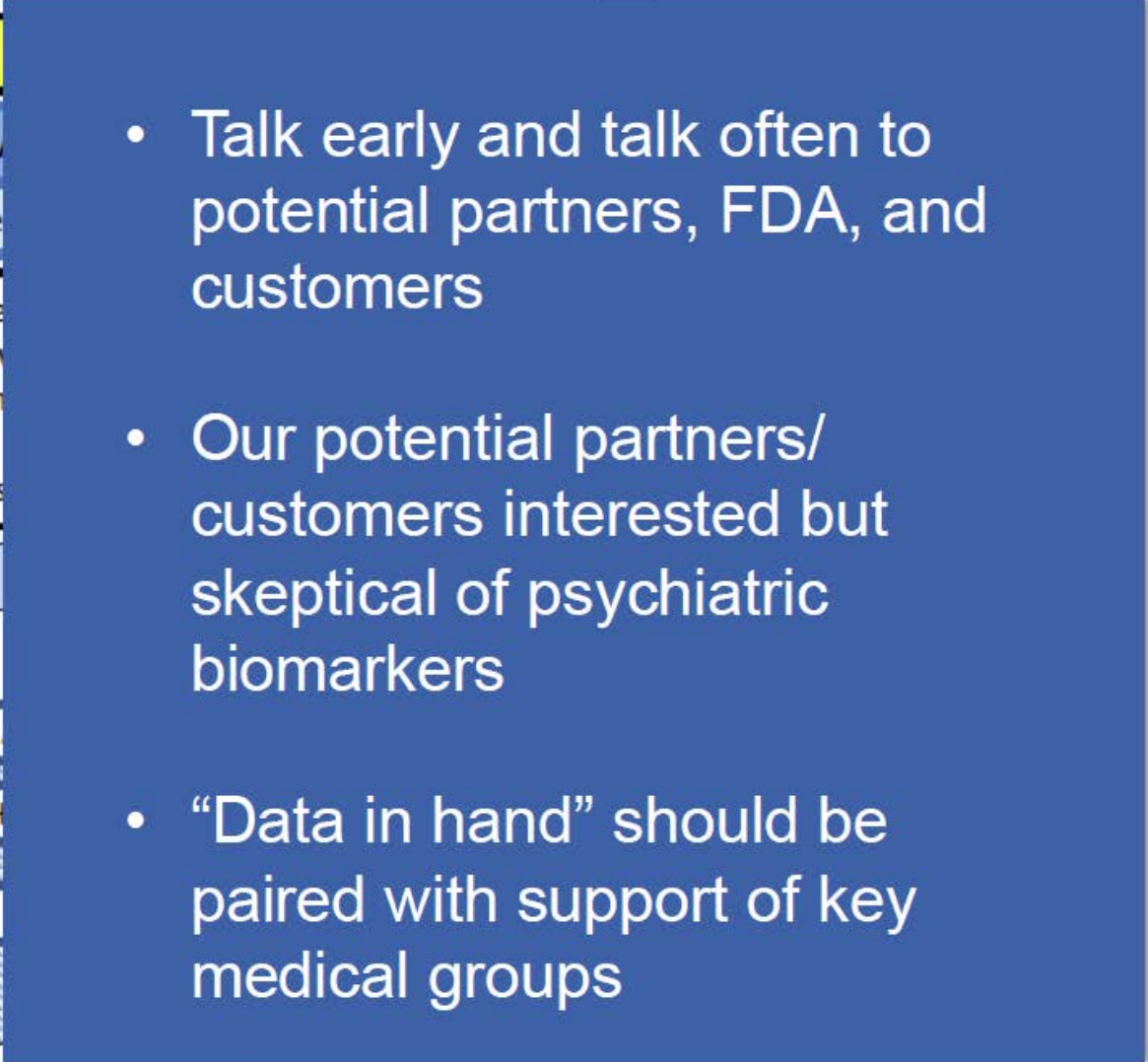


21_Depression Grand Challenge: RX

What we learned about Key Activities



What we learned about Key Activities



- Talk early and talk often to potential partners, FDA, and customers
- Our potential partners/ customers interested but skeptical of psychiatric biomarkers
- “Data in hand” should be paired with support of key medical groups

Key Partners

UCLA

Supplier (100k-person cohort)
Investment of capital, institutional
and research resources/support

Funding
agencies

Investment of capital
(traditional research
funding)

Pharma

Joint Venture
Strategic Alliance
(New Therapeutics)

Key Activities

DGC
(Research)

- Collect 100k-person cohort

- Identify, Test, Validate Biomarkers of Depression

- Create Protectable IP

- Expanding DGC Database
(Further Develop Biomarkers)

DGC
(Dx)

Fund
Ongoing
Research

Royalty
On Sales

License IP (Biomarkers)
& Development

Manufacturer
(e.g. Roche)

Biomarker
Test Kit /
Analysis

Diag./Ref. Labs
(e.g. Quest)

\$\$ / Kit &
\$\$ for Analysis
Support

Direct Customer(s)

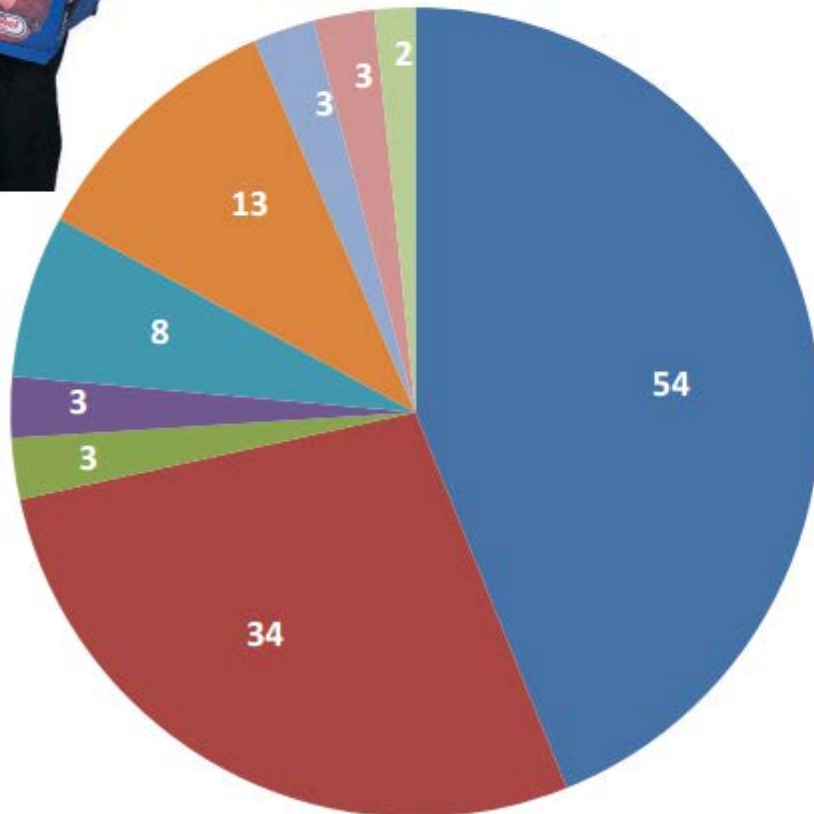
How We Got Here: Reproducibility Crisis



Published in *Science*

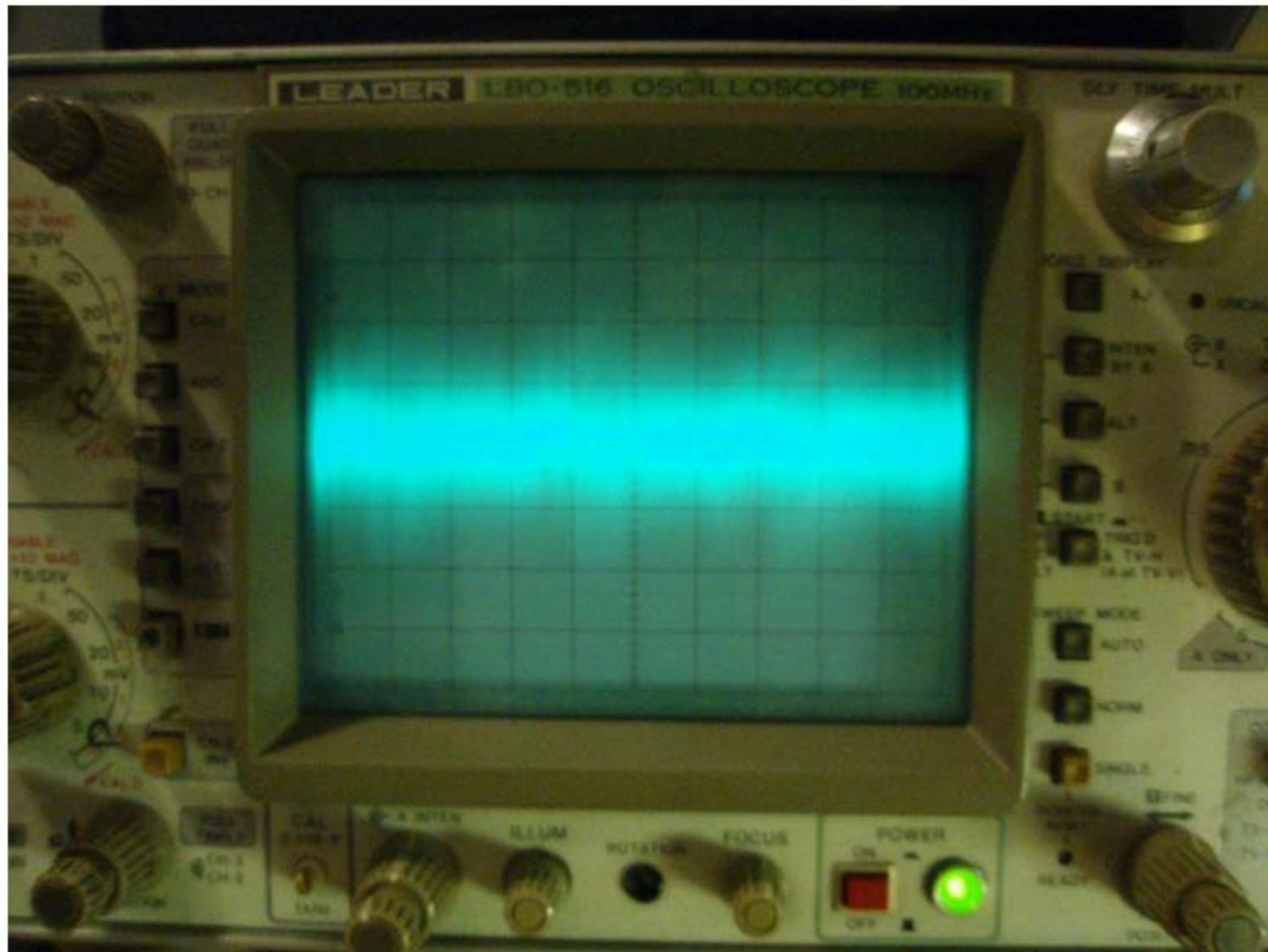
Outcome at Amgen

So Here's What We *Did*: 123 Interviews Logged



- Faculty
- Grad Students and Postdocs
- CRO
- Device
- Pharma
- Gov't
- IACUC
- NGO
- Biostatisticians

What did We *Learn* About our Strategy?



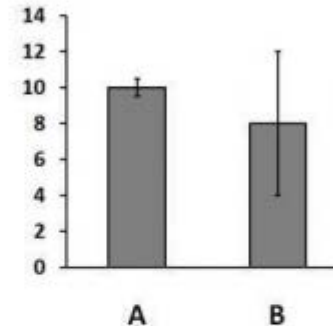
A Partner is Born



MR T TEST

"THAT AIN'T SIGNIFICANT, FOOL!"

VIA 9GAG.COM



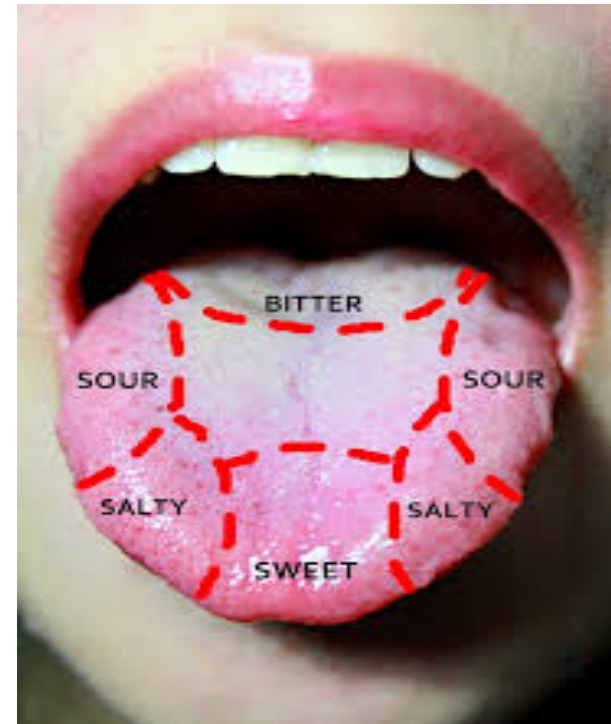
- **Interview 113: Susan Messing, Rochester**
- **Interview 70: Jim Sayre, UCLA**

It's Like The Spanish Inquisition!



Course Objective: Simulate A Startup

- Create the pressures, uncertainty, and challenges of a real startup
- Give you a running start at understanding how to test your hypotheses in a real-world business sense
- Provide a taste (just a taste) of what a start up is like



What we know now...



No **research** plan survives first contact with the **real world**